



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,442	07/19/2000	Alberto Pique	N.C.79.834	1870

7590 05/01/2003

Amy Loch Rensing
Associate Counsel (Patent) Code 1008.2
Naval Research Laboratory
Washington, DC 20375-5000

EXAMINER

FULLER, ERIC B

ART UNIT PAPER NUMBER

1762

DATE MAILED: 05/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/619,442

Applicant(s)

PIQUE ET AL.

Examiner

Eric B Fuller

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 and 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-19 and 26-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 27 and 28 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, applicant has added by amendment that the first laser removes the source material from the surface of the support by matrix assisted pulsed laser evaporation direct write. Applicant claims that support may be found on page 6, lines 4-6. However, this passage only teaches that a direct write method of laser transfer is known in the prior art. There is no teaching in the specification that a matrix is used in the transfer of the present invention or that the method taught in U.S. Patent 6,177,151 is the method to use in the transfer.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Although the method of “matrix assisted pulsed laser evaporation direct write” is taught in application US Patent 6,177,151, it is what limitations the applicant is requiring in order for the method to be considered to be a “matrix assisted pulsed laser evaporation direct write”. For example, it is unclear if any matrix reads on the claim or if the claim must comprise a specific matrix (one from the U.S. Patent).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 15, 17-19, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joyce, Jr. et al. (US 5,292,559) in view of Axtell, III et al. (US 6,238,847 B1).

Joyce teaches a method of transferring materials, such as gold, to substrates by the use of pulsed laser (abstract). The laser is directed through a laser transparent support and strikes the coating at a defined location with sufficient energy to cause the source material to be removed from the surface of the support at the defined location (column 2, lines 25-40). The source material is then deposited on the substrate in a defined location (column 3, lines 30-40). The transfer achieves excellent adhesion over the prior art (column 3, line 34), but fails to teach the use of a second laser.

However, Axtell teaches that a permanent adhesion may be achieved by laser irradiating a material, such as gold (table 1), that is applied to the surface of the

Art Unit: 1762

substrate (column 7, lines 58-67). As Joyce is concerned with increasing the adhesion of transfer, and Axtell teaches a step that further increased that adhesion of an applied layer, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a second laser to irradiate the applied layer of Joyce. By doing so, a permanent adhesion is achieved, as taught by Axtell.

As to claim 17, neither reference teaches a temperature that the substrate is maintained at. However, it is also taught not to alter it. Therefore, it is the position of the examiner that this is inclusive of using room temperature, which reads on the applicant's claim.

As to claims 18 and 19, Joyce, teaches that the target is a layer of polymer deposited on the support followed by a layer of the transfer material. The polymer is vaporized by the laser and blows off the transfer material onto the substrate such that the transfer material is unchanged (column 3, line 40 – column 4, line 5). The transfer material is metal. Since it is the polymer film that causes the transfer, and not the transfer material itself, one of ordinary skill would realize that the identity of the transfer material of Joyce is not crucial to the success of the method. The reference fails to explicitly teach that the material may be a mixture of an organometallic compound and a metal powder. However, Axtell teaches that permanent bonds may be achieved with the applied layer being mixtures of organometallic compounds and metal powders (table 1). Therefore, to use such mixtures as the applied layer would have been obvious at the time the invention was made to a person having ordinary skill in the art with a reasonable expectation of success, as Axtell teaches the permanent bond is possible

Art Unit: 1762

and the transfer material of Joyce is not crucial. To use silver neodecanoate and silver would have been obvious from table 1 of Axtell as well, as shown in the previous Office Action.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joyce, Jr. et al. (US 5,292,559) in view of Axtell, III et al. (US 6,238,847 B1) as applied to claim 15 above, and further in view of Baum et al. (US 5,220,044).

Joyce in view of Axtell teaches the limitations to claim 15, but fail to teach pretreating the substrate with one of the lasers. However, Baum teaches that to heat the substrate with the laser or to heat the source material in on the substrate, such as in Axtell, is equivalent in allowing the source material to reach the transformation temperature while on the substrate (column 3, lines 5-15). Therefore, to use either method would have been equally obvious. To use the method of heating the substrate would read on the applicant's limitation of pretreating with a laser as the substrate is heated to the desired temperature before deposition occurs.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

Art Unit: 1762

patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 15 and 26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,177,151 B1 in view of Axtell, III et al. (US 6,238,847 B1).

The co-assigned U.S. Patent, in claim 1, teaches the transferring method as claimed by the applicant in the present invention. The U.S. Patent fails to teach the second layer performing the transforming step. However, Axtell teaches to use a laser in order to sinter metal onto a substrate such that a strong permanent bond exists (abstract). To use the sintering method of Axtell in combination with the method taught by claim 1 of the prior U.S. Patent would have been obvious at the time the invention was made to a person having ordinary skill in the art. By doing so a stronger, permanent bond is realized.

Response to Arguments

The examiner has withdrawn the rejections of the previous office action in response to the applicant's arguments of the layer of Axtell requires washing of the non-irradiated portions wherein the layer produced by Joyce is all ready sufficiently adherent such that washing may not be possible. Thus, the combination of Axtell in view of Joyce, specifically to use the process of Joyce to apply the coating of Axtell, would not

have been obvious at the time the invention was made to a person having ordinary skill in the art because the coating may not be able to be removed.

However, the examiner has replaced the rejection with Joyce in view of Axtell. It is the position of the examiner that Joyce in view of Axtell, specifically to use the additional step of Axtell to further adhere the layer produced by Joyce, would have been obvious at the time the invention was made to a person having ordinary skill in the art. Removal is not required in this combination, as it is only the teaching of further irradiation causing stronger adherence that is required in order to reap the additional benefits. Motivation exists in that Joyce teaches the desire in the art to have the coating be strongly adhered to the substrate and Axtell teaches a step that further increases the adherence (excellent adhesion versus permanent adhesion). Applicant's arguments are moot in view of the new grounds of rejection.

Applicant argues that Baum fails to teach pretreating because it does not alter the substrate. This argument is not found persuasive. As the laser heats the substrate, the temperature is changed, this reads on it being altered. Applicant argues that heating is reversible and the pretreatment of claim 16 irreversibly alters the substrate. However, "irreversible" is not a claimed feature.

Applicant argues, in response to the double-patenting rejection, the validity of the combination of Chrisey in view of Axtell. Applicant argues that the examiner has not cited motivation that is found in the reference. This is not found persuasive. Motivation

Art Unit: 1762

does not have to be explicitly taught in the art *In re Sernaker* 217 USPQ 1 (Fed. Cir. 1983), citing *In re Scheckler* 168 USPQ 716 (CCPA 1971). Regardless, Axtell teaches the second laser produces a permanent bond. This is motivation to use it in the method of Chrisey, as providing a permanent bond is clearly a benefit in the art of creating printed circuit boards.

Applicant argues that the materials of Chrisey and Axtell are different. This is not persuasive, as both references explicitly teach gold. Chrisey teaches to transfer gold and Axtell teaches to permanently bond the applied gold to the substrate. Applicant argues that no adhesion problem is disclosed by Chrisey, thus there is no motivation to improve the adhesion. However, Chrisey fails to teach that the bond is permanent. Axtell teaches that the bond is made to be permanent. This is clearly a benefit in the art of producing printed circuit boards, as one would want the bond to permanently last, and is the source of the motivation.

Applicant argues that it would not make sense to coat the entire substrate of Axtell by the process of Chrisey. This argument is moot as it pertains to Axtell in view of Chrisey, not Chrisey in view of Axtell. The proposed combination only suggests that an additional laser be used in Chrisey such that a permanent bond is formed between the transferred material and the substrate.

Applicant argues that one would not be motivated to combine an exposure method (Axtell) with a transfer method (Chrisey). This argument is not persuasive. It has been shown that since Axtell teaches how to form a permanent bond from applied

Art Unit: 1762

gold, motivation exists to use that method in order to permanently bond the applied gold of Chrisey.

Conclusion

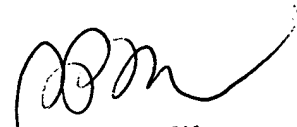
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (703) 308-6544. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



EBF
April 29, 2003



SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700